

WHAT IS CLAIMED IS:

1 1. A method of dynamically mapping addresses between a virtual disk
2 address and one or more physical block addresses for a storage system in response to a write
3 operation requested by a host system, the method comprising:

4 receiving a write request from a host, said write request including a virtual
5 memory address and one or more blocks of data;

6 determining whether memory space in the storage system has been allocated
7 for the one or more blocks of data based on the virtual memory address;

8 if it is determined that memory space has been allocated, completing the write
9 operation to the allocated memory space; and

10 if it is determined that no memory space has been allocated:

11 automatically allocating memory space in the storage system for the

12 one or more blocks of data; and

13 completing the write operation to the allocated memory space.

1 2. The method of claim 1, wherein determining includes determining
2 whether a mapping table includes a link between the virtual address and one or more physical
3 block addresses of the storage system.

1 3. The method of claim 1, wherein automatically allocating includes
2 automatically updating a mapping table to include an entry linking the virtual address and one
3 or more physical block addresses of the storage system.

1 4. The method of claim 1, wherein if it is determined that no memory
2 space has been allocated, the method further comprises:
3 determining the number of blocks of memory space in the storage system to be
4 allocated.

1 5. The method of claim 4, wherein the number of blocks allocated is
2 greater than the number of data blocks included with the write request.

1 6. The method of claim 1, wherein the storage system includes a plurality
2 of storage devices.

1 7. A method of dynamically mapping addresses between a virtual disk
2 address and one or more physical block addresses for a storage system in response to a
3 request from a host system to perform an operation on the storage system, the method
4 comprising:
5 receiving a request from a host to perform an operation on one or more blocks
6 of the storage system, said request including a virtual memory address;
7 determining from a mapping table whether memory space in the storage
8 system has been allocated for the virtual memory address;
9 if it is determined that memory space has been allocated, completing the
10 operation on the allocated memory space; and
11 if it is determined that no memory space has been allocated:
12 automatically allocating memory space in the storage system for the
13 virtual address; and
14 completing the operation on the allocated memory space.

1 8. The method of claim 7, wherein the operation is a read operation, and
2 wherein if it is determined that memory space has been allocated, completing the operation
3 includes retrieving the data from the allocated memory space.

1 9. The method of claim 8, wherein the operation is a read operation, and
2 wherein if it determined that no memory space has been allocated, completing the operation
3 includes returning a default formatted page without retrieving any data from the storage
4 system.

1 10. The method of claim 7, wherein the operation is a write operation and
2 wherein the request includes one or more blocks of data to be written to the storage system.

1 11. The method of claim 10, wherein if it is determined that no memory
2 space has been allocated, the method further comprises:
3 determining the number of blocks of memory space in the storage system to be
4 allocated.

1 12. The method of claim 11, wherein the number of blocks allocated is
2 greater than the number of data blocks included with the write request.

1 13. The method of claim 7, wherein determining includes determining
2 whether a mapping table includes a link between the virtual address and one or more physical
3 block addresses of the storage system.

1 14. The method of claim 7, wherein automatically allocating includes
2 automatically updating a mapping table to include an entry linking the virtual address and one
3 or more physical block addresses of the storage system.

1 15. The method of claim 7, wherein the storage system includes a plurality
2 of storage devices.